

Service Manual

Model : LCDM-2000
(Cash Dispensing Unit)

Total Page : 48 pages (including cover)

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PULOON Technology Inc.

Revision Record

Rev. No	Date	Description of Change	Page
V3.0(INT)	02.04.01		
V3.51(INT)	04.09.16	Reject Causes Added	P32 - 35
		Reference Value in Test Program Added for Checking	P40 - 48
V3.52(INT)	05.08.09	Unnecessary Page Removed	
V3.53(INT)	05.11.23	Rated consuming current	P5
V3.54(INT)	07.02.06	Add Motor Stop Error Cause	P31
V3.55(INT)	09.07.14	Correction of Dip Switch Setting	P33

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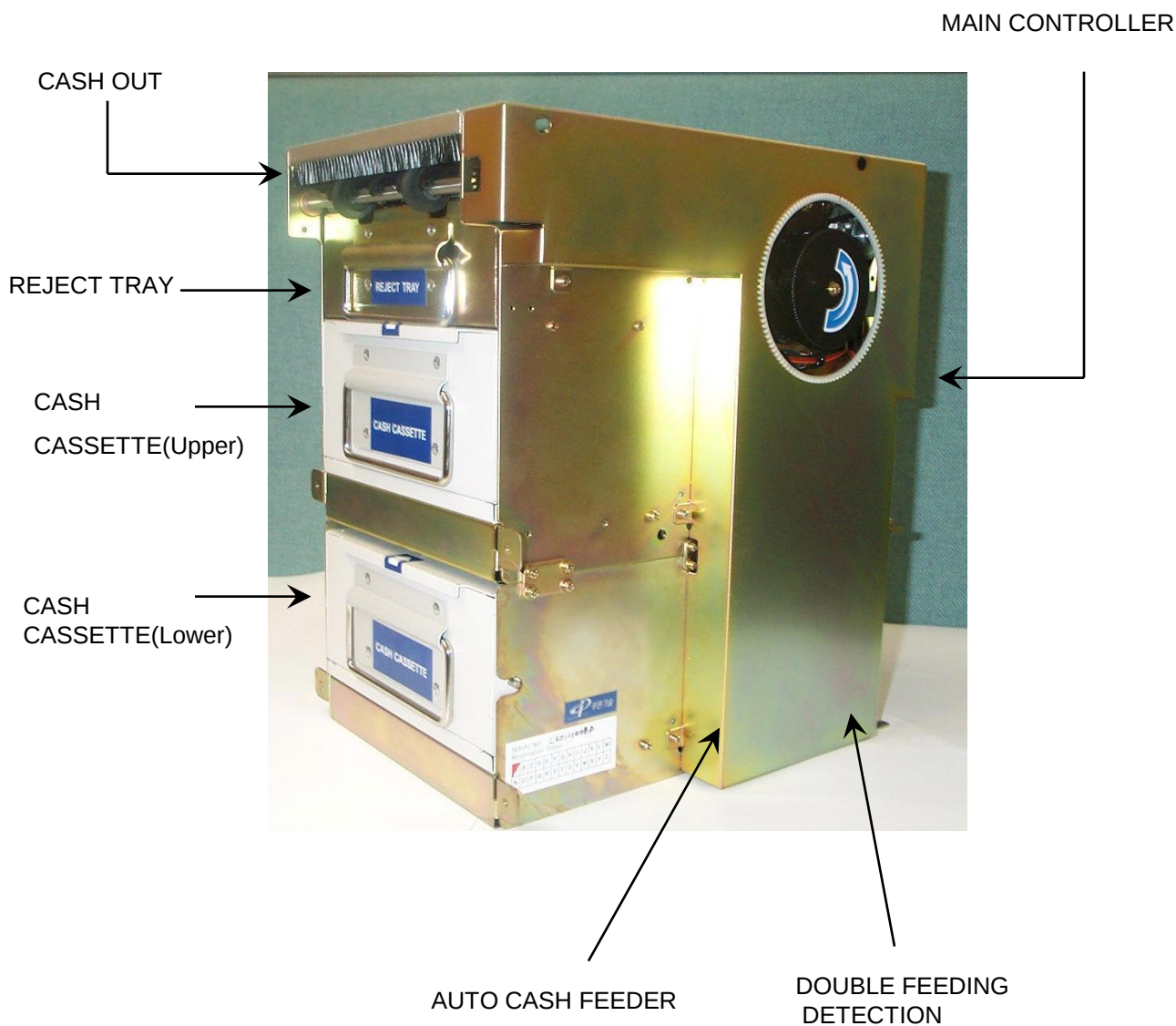
4. Operating the LCDM-2000

1. Functional Description

1-1. Introduction

This Specification is related to LCDM-2000 which is applied to ATM for Retail Market & other Bill Exchanger.

LCDM-2000 consists of Feed Module, Upper & Lower Cash Cassette, Reject Tray & Main Controller. Features is below

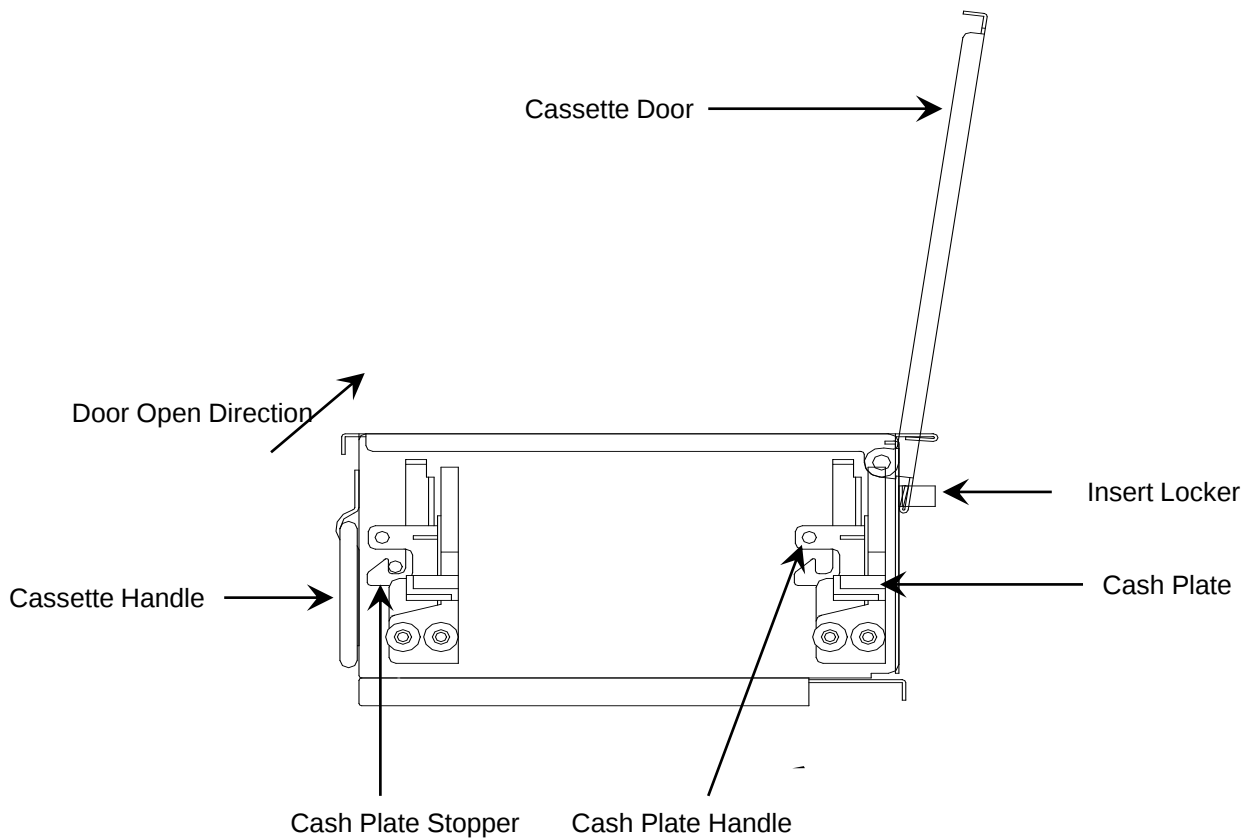


1-2. Specification

NO	Term	Specification
1	Denomination	2 denomination
2	Cassette Capacity	Approx. 1,000 (123mm)
3	Dispensing Speed	3 notes/sec.
4	Usage Notes Size	height : 62mm~78mm , width : 100mm~162mm
5	Double Feeding Detection	Included (Mechanical Method)
6	Reject Tray Capacity	Approximate 30 notes
7	Access Type	Front Type
8	Input Voltage	DC 24V
9	Interface	RS 232C
10	Dimension	310.2(D) x 356(H) x 270.5(W) (Unit:mm)
11	Near-end Detection	Approximate 30 ~50 notes
12	Bill-End Detection	0 or Approx. 10~30 notes (by setting dip switch, refer to product spec chapter4.4)
13	Rated Consuming Current	Load current, continuous MIN - 0.16A MAX - 1.9A Load current, peak Max - 4.5A
14	Operating Temperature	5 °C ~ 40 °C
15	Storage Temperature	-10 °C ~ 60 °C
16	Operating Humidity	20% ~ 80% RH
17	Storage Humidity	10% ~ 90% RH

1-3. Cash Cassette Structure

Cash cassette do the role of transporting inserted bill to next module one by one and consists of Cassette Door,Cassette Body & Cassette base



1-3-1. Capacity & Currency of Cash cassette

Capacity is approximately 123 mm(I.E about 1,000 bills can be stacked base on new note) & usable currency dimension is as below diagram

Minimum		Maximum	
Height	Width	Height	Width
62mm	100mm	78mm	162mm

1-3-2. Cash cassette door

Cash cassette door is magnetically closed & can be opened
If pushed label direction without special locker

1-3-3. Cash Cassette Body

Cash cassette body consists of frame,pushing plate & stopper.
Pushing plate moves bill to “Pick-up roller” along with side- slot by power of spring.
Hook & Axle of stopper is in the rear of “pushing plate & frame” respectively.
Stopper is automatically closed & opened by backing pushing plate and opening door respectively.

1-3-4. Cash Cassette Base

When cash cassette is inserted, the part of transporting open automatically
by the function of Cash cassette base which is located in the part
of transporting part.

1-3-5. Bill-End Detection

The Bill-End detection can be set by dip switch (the 1st switch on the SW1).

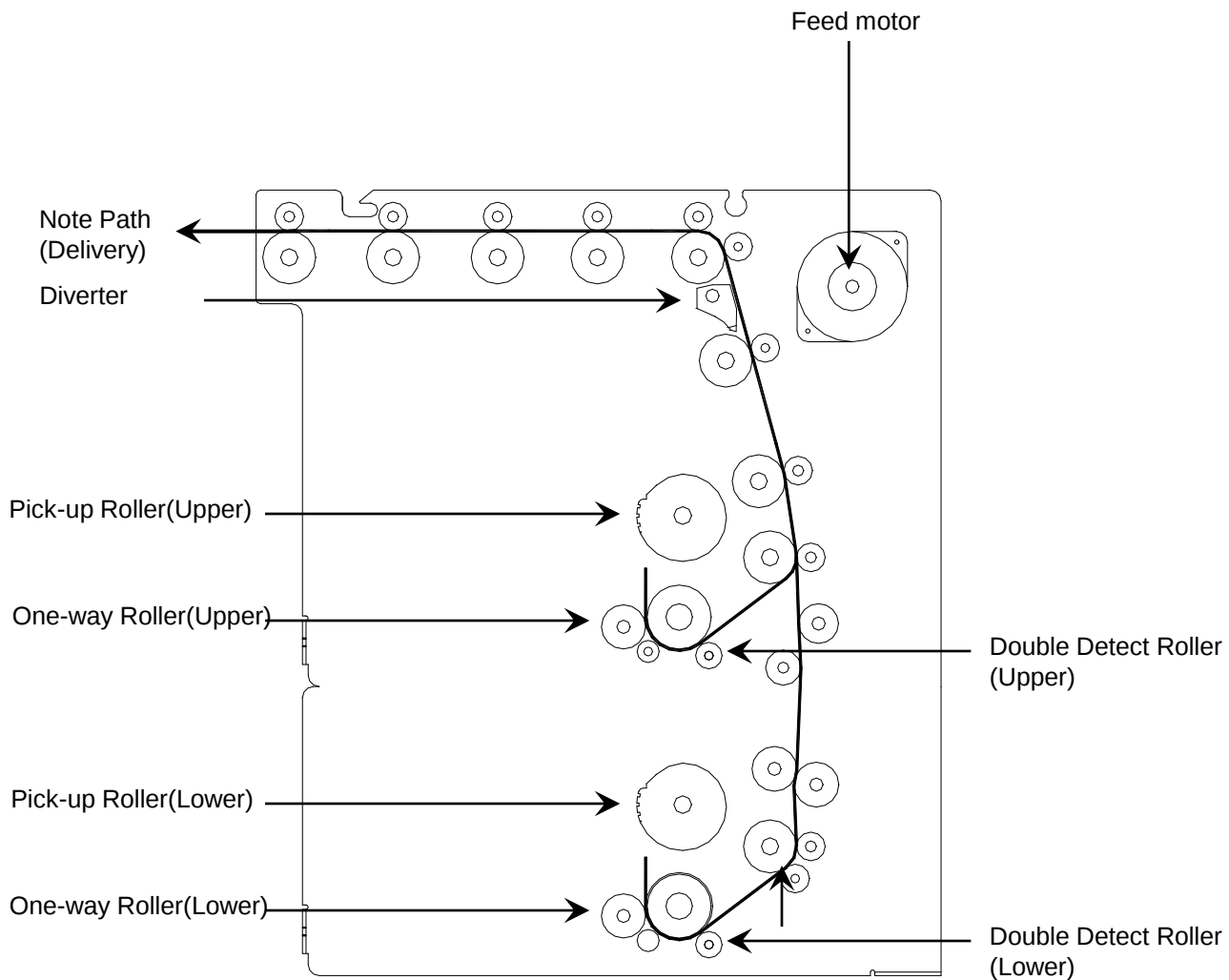
If you set the switch “ON”, the unit continues to dispense until approximately 10~30 bills remains, and then Bill-End sign will displayed with stopping the unit.

Else if you set the switch “OFF”, the unit continues to dispense until none of bills remain, and then Bill-End sign will displayed with stopping the unit.

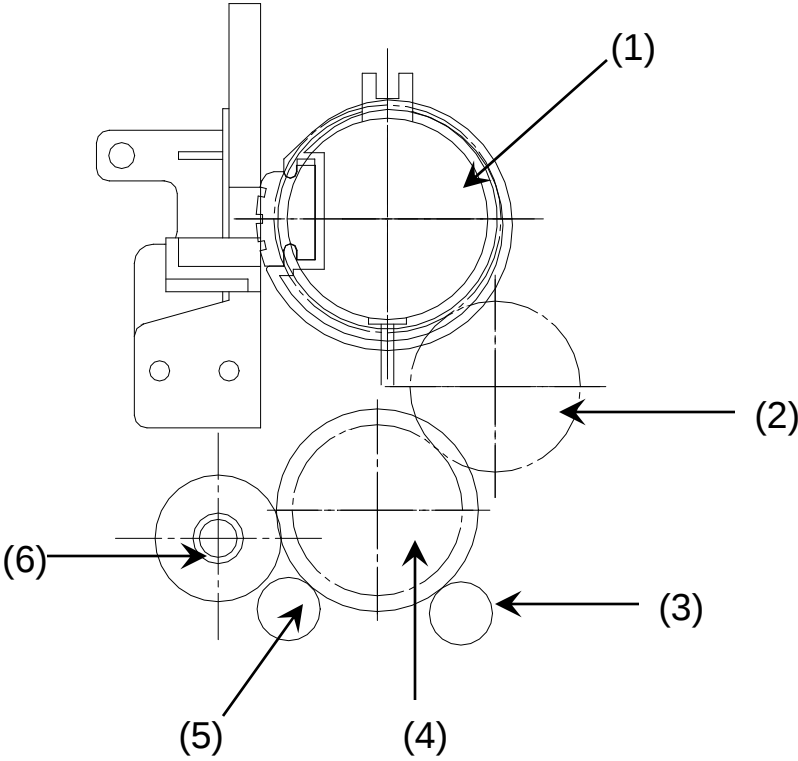
There is hole in the front of “Cash Cassette” and detection process is done by this hole. (Please refer to the layout of sensor for location)

1-4. Feed Module Structure

Feed Module consists of auto cash feeder part , double feeding detection part , diverting mechanism part , cash delivery part and Feature is shown below.



1-4-1. Auto Cash Feeder Part



< Auto Cash Feeder >-

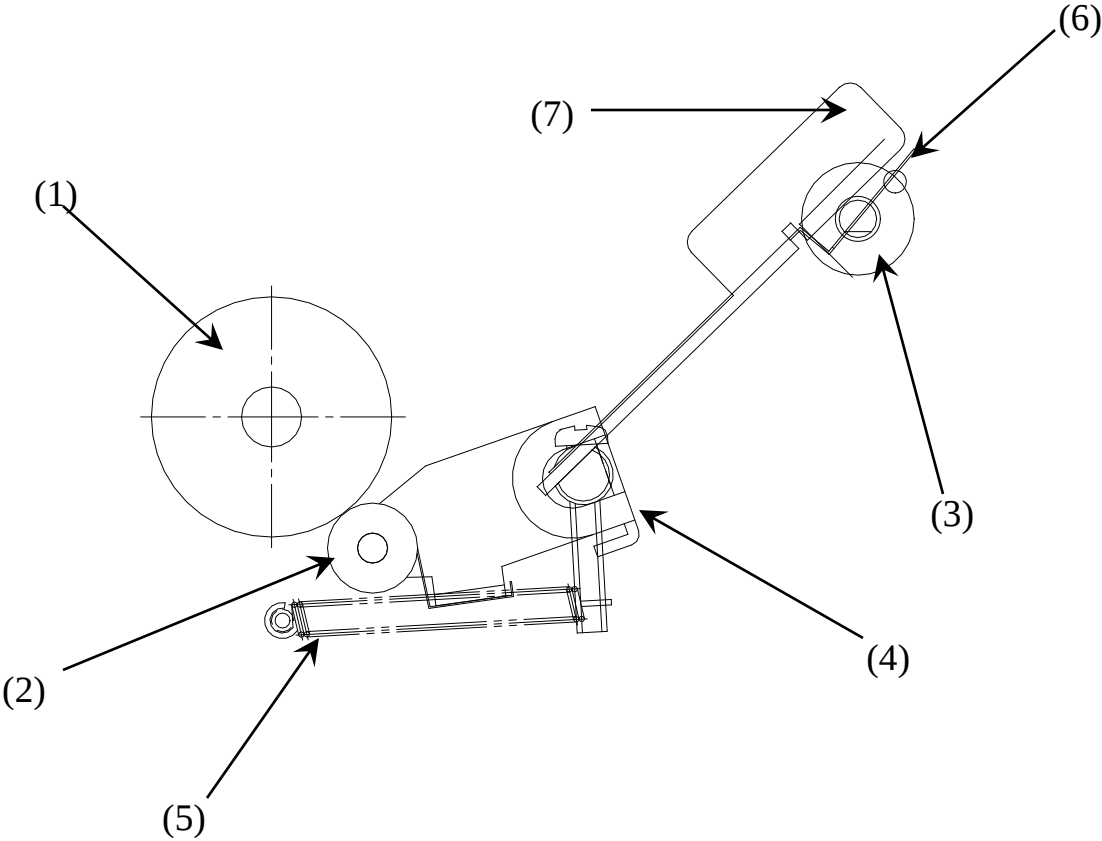
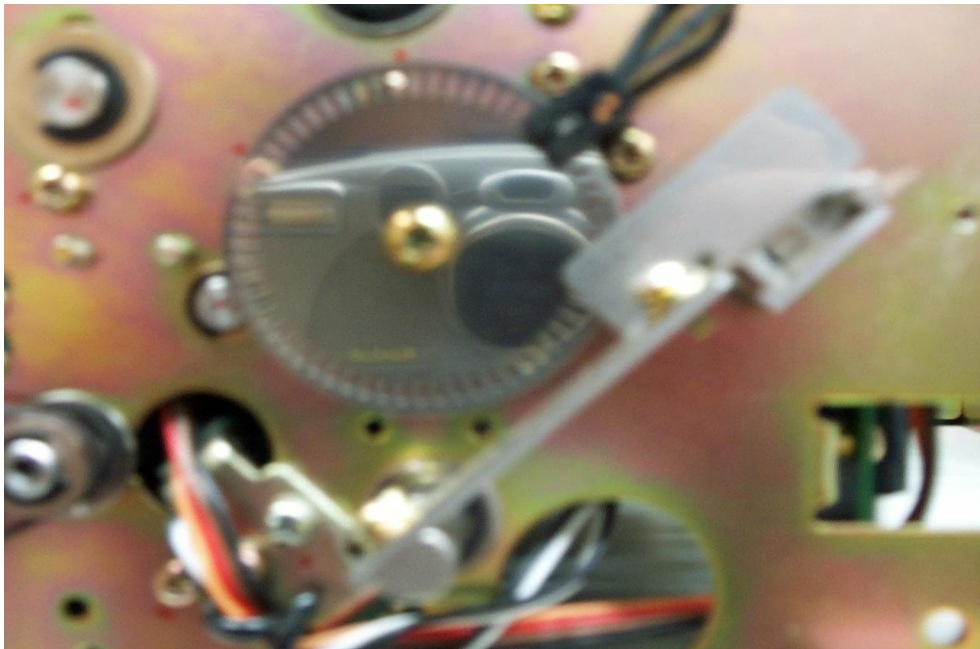
(1) Features

- Friction roller feeding
- Feeding speed : 3 notes/sec
- Force transportation by clutch on/off

(2) Description

NO	Description	Function
(1)	SHAFT PICK-UP ROLLER ASS'Y	Pick-up & moving bills in the cash cassette
(2)	SHAFT SPACE CONNECTION ASS'Y	Force transportation of (1) & (4) parts
(3)	ROLLER IDLE	Moving bills by spring force
(4)	SHAFT FEED ROLLER ASS'Y	Separation & moving bills which was picked up
(5)	BEARING R-1030	Moving bills by spring force
(6)	SHAFT ONEWAY ROLLER ASS'Y	Separation of bills which was pick-up

1-4-2. Double Feeding Detection Part



< Constitution of Thickness Recognition >

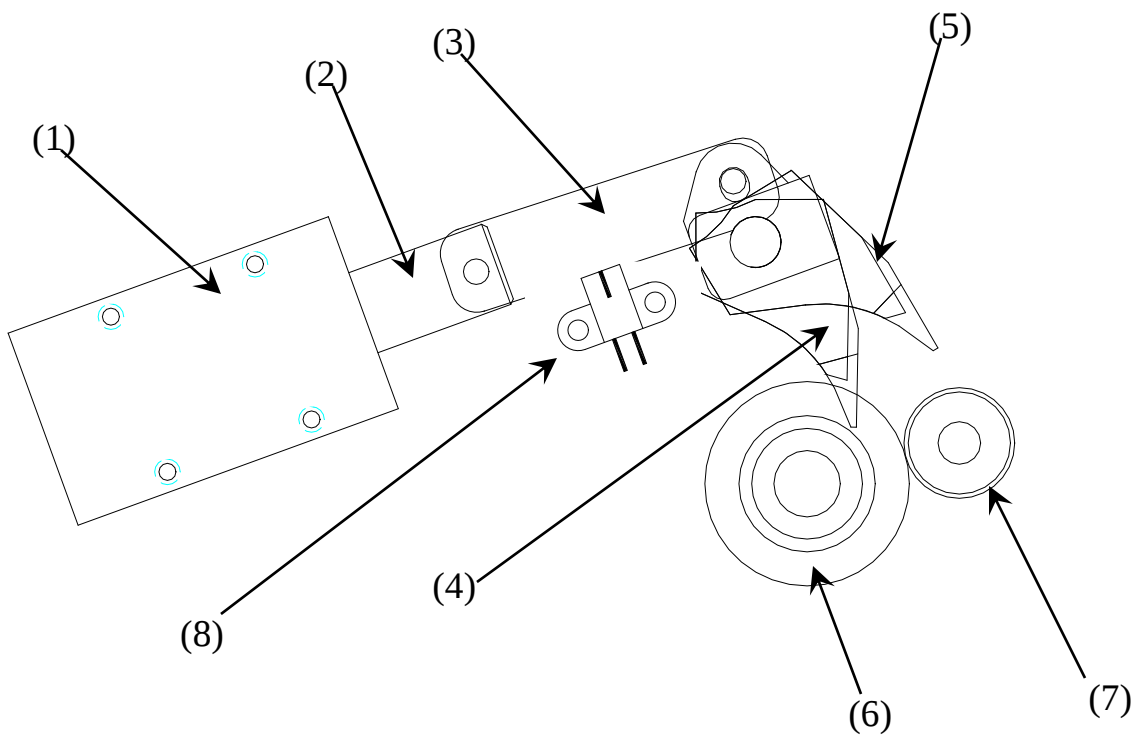
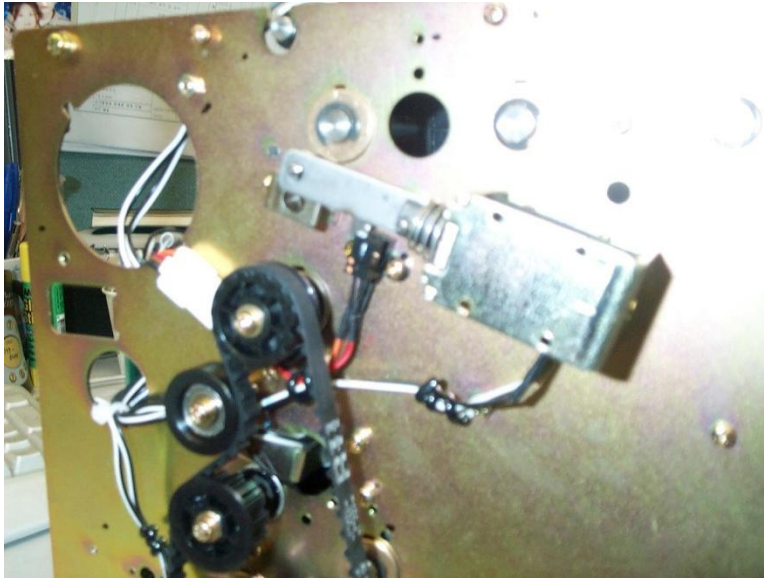
(1) Features

- Thickness recognition by Mechanical Amplification
- Thickness recognition by RVDT segment for rotation

(2) Description

NO	Description	Function
(1)	SHAFT FEED ROLLER ASS'Y	DATUM ROLLER of thickness recognition Outer dimension is important
(2)	BEARING R 1240	DETECT ROLLER, amplification role with rotation as the center of (4) part
(3)	RVDT segment (LP06M3R)	Recognize rotation displacement Minute & fast speed of recognition
(4)	ARM D/D HINGE	DETECT ROLLER' rotation LINK and transporting rotation power to (7)
(5)	SPRING RVDT TENSION	Push power to DETECT ROLLER
(6)	PLATE D/D SENSOR	RVDT' rotation STOPPER and transporting exact displacement using Elasticity
(7)	LEVER D/D HINGE	Transporting (4) rotation power with amplification using RVDT

1-4-3. Diverting Mechanism Part



< Constitution of divergence part >

(1) Features

- A sheet **divergenced** by DC Solenoid
- Simplification of Transportation part by Single PATH Method

(2) Description

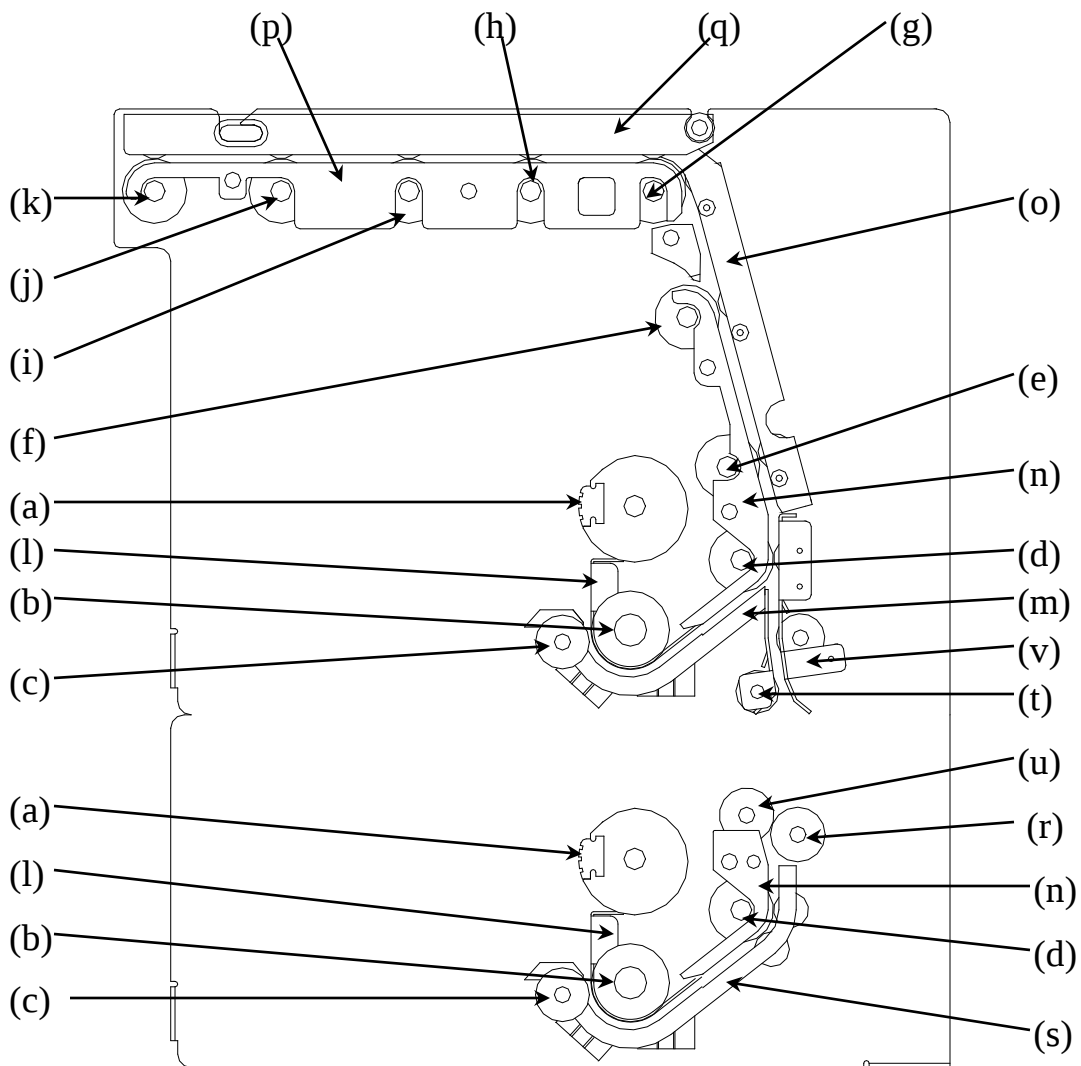
NO	Description	Function
(1)	SOLENOID 1040 JUWON	SOLENOID for Divergence
(2)	SOLENOID PLUNGER	PULL TYPE method PLUNGER
(3)	LINK SOLENOID STAMP	Transporting SOLENOID' round trip movement
(4)	SHAFT DIVERTER ASS'Y (normal location)	GUIDE of transportation part & move according to SOLENOID' movement Decision of EJECT & REJECT
(5)	SHAFT DIVERTER ASS'Y (REJECT movement location)	
(6)	SHAFT ASS'Y CASH FEED 3	Bill moving ROLLER
(7)	ROLLER ASS'Y IDLE 13	Bill moving ROLLER
(8)	SOL SENSOR	Checking the Diverter solenoid

1-4-4. Transportation part

(1) Features

- This part consists of working ROLLER & subordinate ROLLER
- Transportation GUIDE is MOLD GUIDE and embodiment of JAM FREE
- Upper part can be easily separated for Maintenance

(2) Constitution



< Constitution of Transportation part >

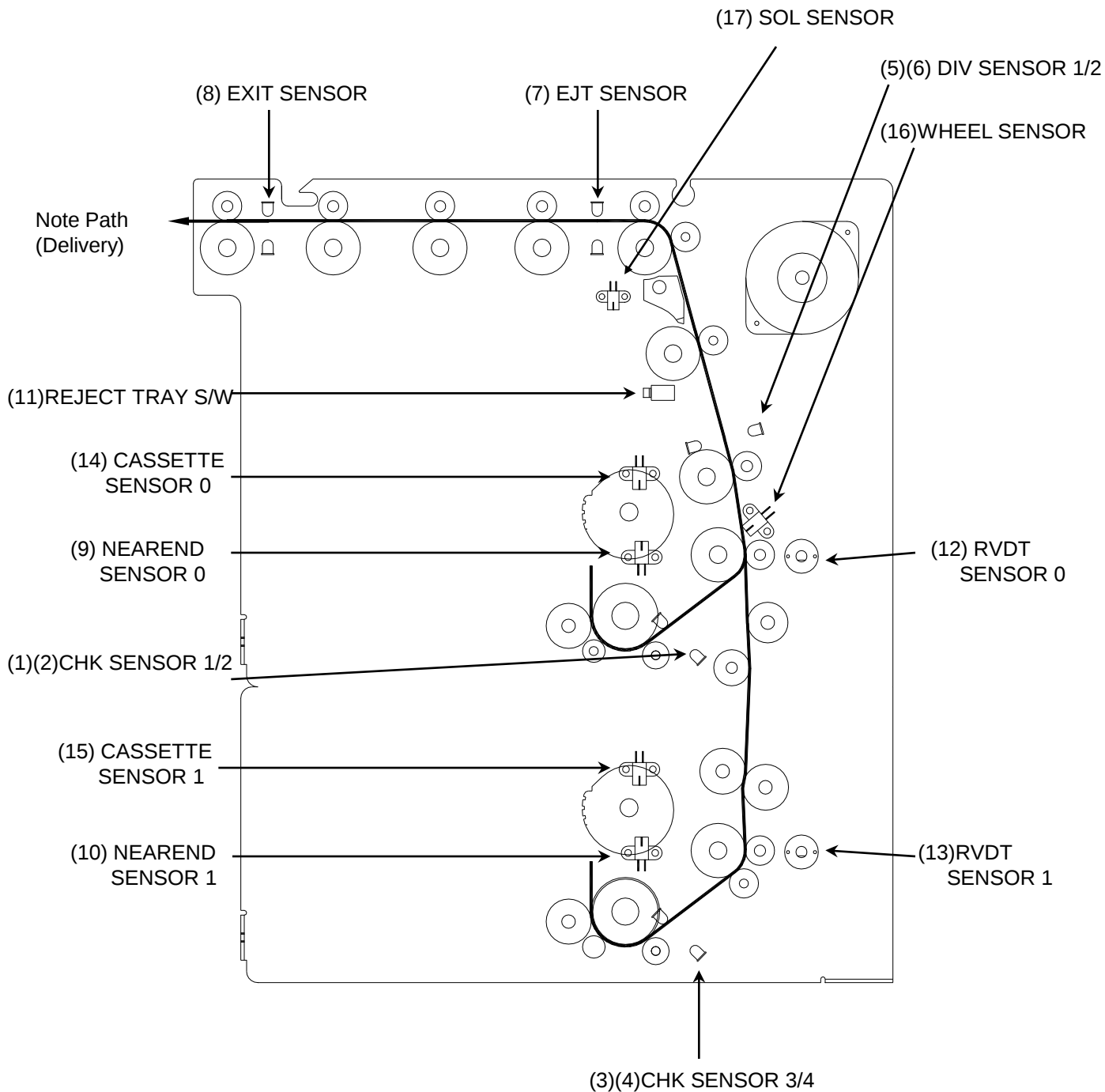
- Segment Name

NO	Name
(a)	SHAFT ASS'Y PICK-UP ROLLER
(b)	SHAFT ASS'Y FEED ROLLER
(c)	SHAFT ASS'Y ONEWAY ROLLER
(d)	SHAFT ASS'Y CASH FEED 1
(e)	SHAFT ASS'Y CASH FEED 2
(f)	SHAFT ASS'Y CASH FEED 3
(g)	SHAFT ASS'Y CASH FEED 4
(h)	SHAFT ASS'Y CASH FEED 5
(i)	SHAFT ASS'Y CASH FEED 6
(j)	SHAFT ASS'Y CASH FEED 6
(k)	SHAFT ASS'Y CASH FEED 6
(l)	GUIDE CASH FEED 1
(m)	GUIDE CASH FEED 2 LCDM-2000 ASS'Y
(n)	GUIDE CASH FEED 3 ASS'Y
(o)	GUIDE CASH FEED 5 ASS'Y
(p)	GUIDE CASH FEED 6 ASS'Y
(q)	GUIDE CASH FEED 7 ASS'Y
(r)	SHAFT ASS'Y CASH FEED 8
(s)	GUIDE CASH FEED 2 ASS'Y
(t)	GUIDE PRESS 2 ASS'Y
(u)	SHAFT ASS'Y CASH FEED 7
(v)	GUIDE PRESS 1 ASS'Y

1-4-5. Function & Layout of SENSOR

The number of Sensor is 17. The function & Layout is shown below.

(1) Layout of SENSOR



(2) Function of Sensor

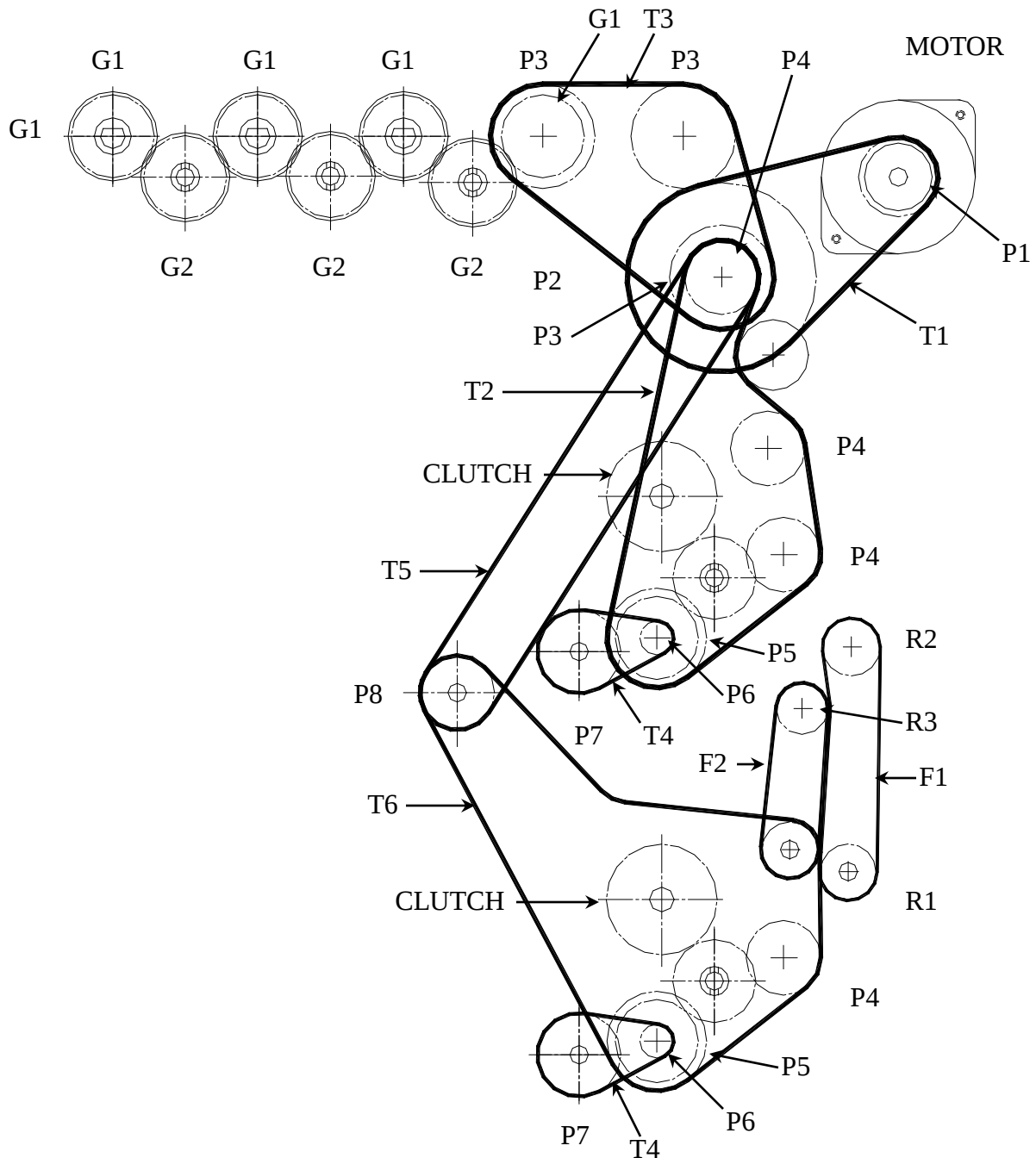
NO	SENSOR Name	Function
1	CHK SENSOR 1	Recognition & Length,Width & Slope checking of bill from Cash cassette(motor side)
2	CHK SENSOR 2	Recognition & Length,Width & Slope checking of bill from Cash cassette(solenoid side)
3	CHK SENSOR 3	Recognition & Length,Width & Slope checking of bill from Cash cassette(motor side)
4	CHK SENSOR 4	Recognition & Length,Width & Slope checking of bill from Cash cassette(solenoid side)
5	DIV SENSOR 1	Recognition of bill location & role of divergence movement(motor side)
6	DIV SENSOR 2	Recognition of bill location & role of divergence movement(solenoid side)
7	EJT SENSOR	Recognition of normal bill location
8	EXIT SENSOR	Recognition of the location & the number of normal bill
9	NEAREND SENSOR 0	Recognition the number of remaining in the Upper Cash Cassette
10	NEAREND SENSOR 1	Recognition the number of remaining in the Lower Cash Cassette
11	REJECT TRAY S/W	Checking the status of Reject Tray
12	RVDT SENSOR0	Recognition of thickness of transported bill in the Upper Cash cassette
13	RVDT SENSOR1	Recognition of thickness of transported bill in the Upper Cash cassette
14	CASSETTE SENSOR 0	Checking the Upper Cash Cassette
15	CASSETTE SENSOR 1	Checking the Lower Cash Cassette
16	WHEEL SENSOR	Control of transporting MOTOR speed
17	SOL SENSOR	Checking the Diverter solenoid

1-4-6. Power Transportation part

[1] Features

- Transportation part work by single MOTOR and power part for Bill separation is transferred & controlled by CLUTCH

[2] Constitution



– Segment Name

NO	Name	Function
G1	GEAR FEED (Z:27, M:1)	GEAR for transporting ROLLER
G2	GEAR DFDM DRIVE (Z:27, M:1)	GEAR for transporting POWER
P1	PULLEY MOTOR(XL16, ϕ 6)	PULLEY MOTOR
P2	PULLEY CASH FEED 1	PULLEY for reduction of speed
P3	PULLEY CASH FEED 2	PULLEY for transporting ROLLER
P4	PULLEY FEED(XL15, ϕ 8)	PULLEY for transporting ROLLER
P5	PULLEY FEED(XL20, ϕ 8)	PULLEY for FEED ROLLER working
P6	PULLEY DRV MXL17	For reduction speed of ONEWAY ROLLER
P7	PULLEY REVERSE (MXL42, ϕ 8)	For reduction speed of ONEWAY ROLLER
T1	BELT TIMING 108XL(W=6.4)	For MOTOR running & Speed reduction
T2	BELT TIMING 140XL(W=6.4)	For transporting torque to PULLEY (driving belt)
T3	BELT TIMING 108XL(W=6.4)	For transporting torque to PULLEY (driving belt)
T4	BELT TIMING 56MXL(W=3.2)	For ONEWAY ROLLER running & Speed Reduction
T5	BELT TIMMING 56XL(W=6.4)	IDLE PULLY driving belt
T6	BELT TIMING 166XL(W=6.4)	For transporting torque to PULLEY (driving belt)
F1	BELT FEEDING PS197 (W=10)	For transporting torque to ROLLER (driving belt)
F2	BELT FEEDING PS140 (W=10)	For transporting torque to ROLLER (driving belt)
R1	ROLLER FEED CROWN (ϕ 18)	Driving ROLLER
R2	ROLLER IDLE CROWN (ϕ 18)	Transporting ROLLER
R3	ROLLER IDLE CROWN (ϕ 16)	Transporting ROLLER

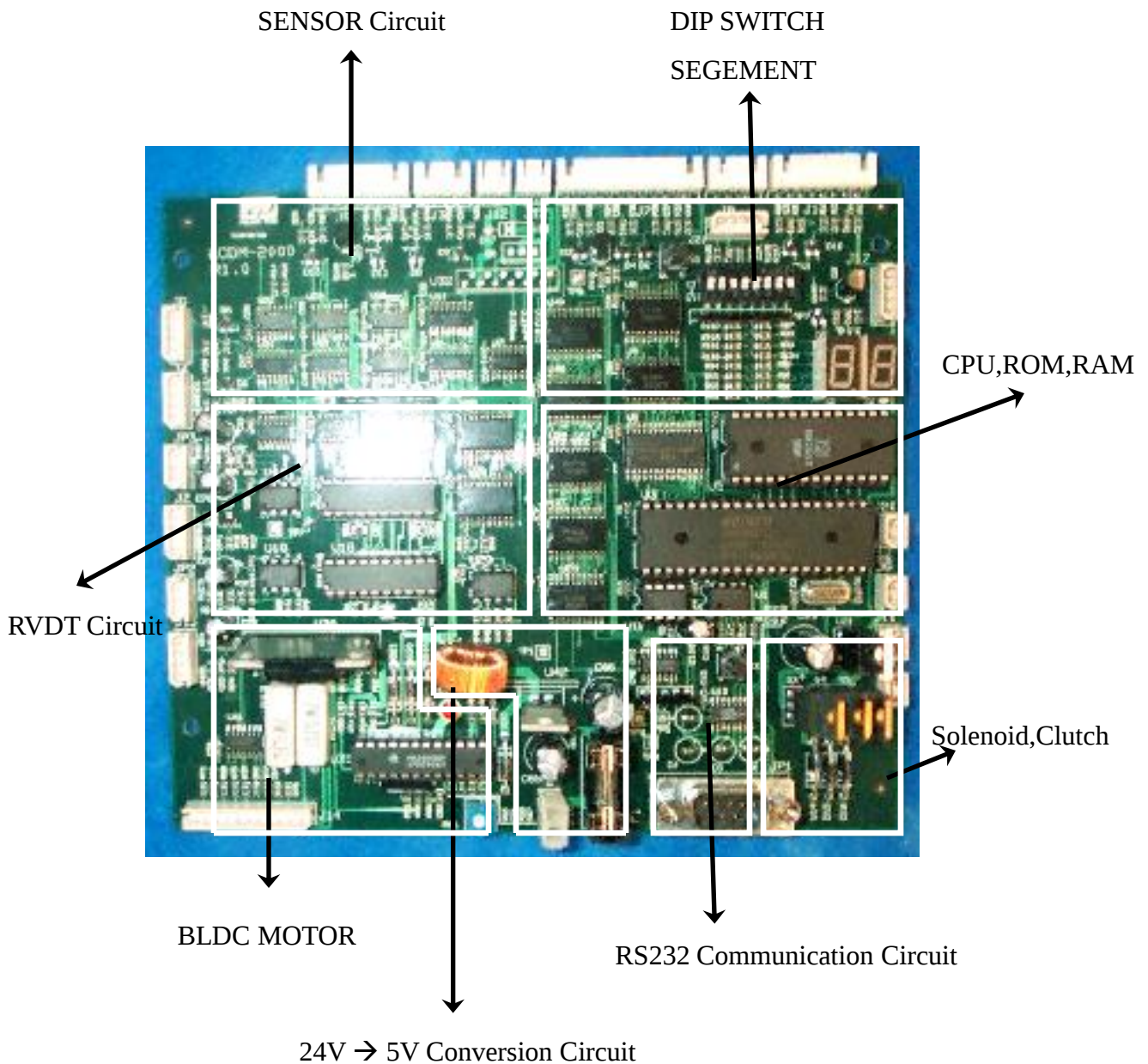
(3) MOTOR

- MAKER : Fuji Micro
- TYPE : Brushless DC Motor

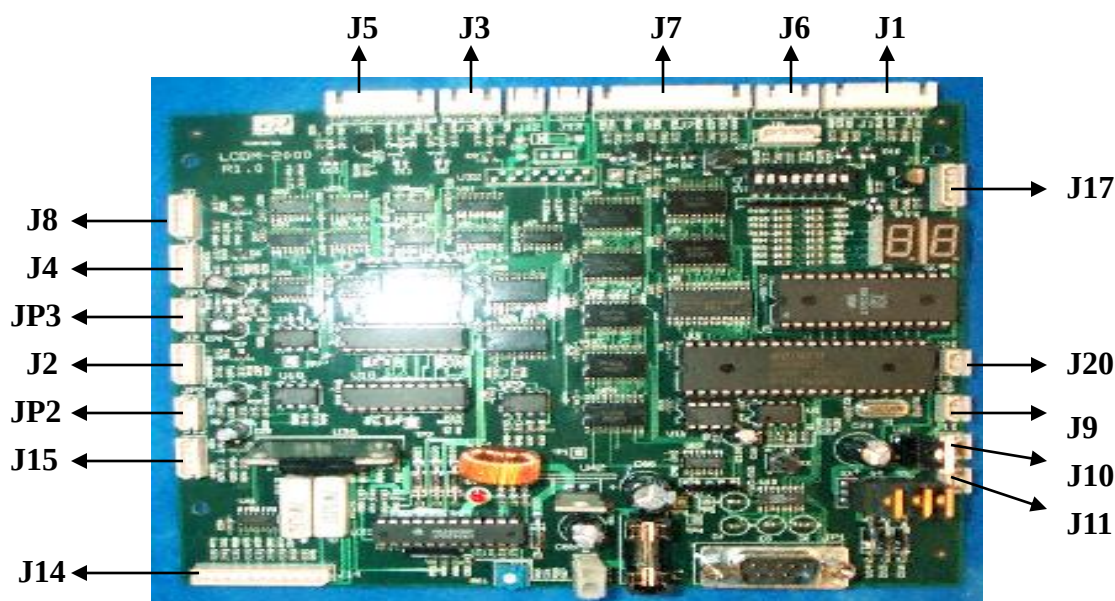
TYPE	Voltage	No Load		Load			Rot
		Current	Speed	Torque	Current	Speed	
FB-806	DC 24V	180mA± 100mA	4800rpm ±250rpm	1kgf- cm	2400mA± 200mA	3500rpm ±200rpm	CW/ CCW

2. H/W Constitution

2-1. Layout of MAIN BOARD



2-2. Connector Layout of MAIN BOARD



J5	CHK1,DIV1 sensor for accepting & emitting light
J3	EJT,EXIT emitting sensor
J7	Upper & Lower Cassette sensor, SOL sensor
J6	EJT,EXIT accepting sensor
J1	CHK2,DIV2 sensor for accepting & emitting light
J8	CHK3 sensor for accepting & emitting light
J17	CHK4 sensor for accepting & emitting light
J4	Lower Near End sensor (Near End 1)
JP3	Lower RVDT (RVDT 1)
J2	Upper Near End sensor (Near End 0)
JP2	Upper RVDT (RVDT 0)
J15	Wheel sensor
J14	BLDC Motor
J20	REJECT TRAY S/W
J9	Lower Clutch (Clutch 1)
J10	Divert Solenoid
J11	Upper Clutch (Clutch 0)
J16	POWER
JP1	RS232 Communication

3. Error Code & Recommended Actions

3-1. Error code

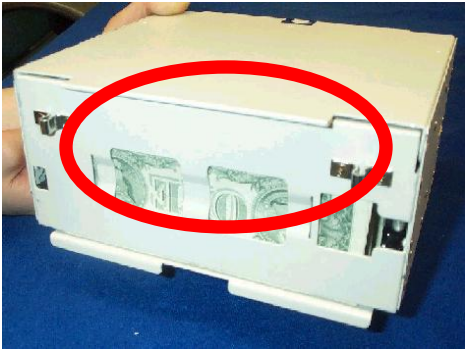
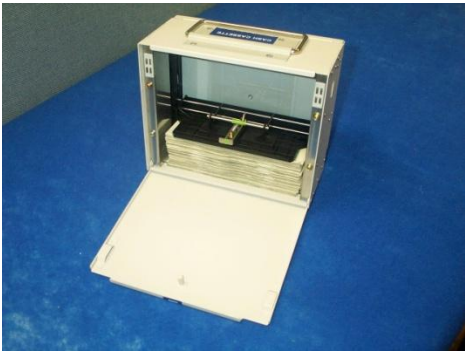
Code	Meaning	Recommended Action
30H	GOOD	
31H	Normal stop	
32H	Pickup error	TABLE 1
33H	JAM at CHK1,2 Sensor	TABLE 2
34H	Overflow bill	TABLE 3
35H	JAM at EXIT Sensor or EJT Sensor	TABLE 3
36H	JAM at DIV Sensor	TABLE 4
37H	Undefined command	
38H	Upper Bill-End	TABLE 10
3AH	Counting Error(between CHK3,4 Sensor and DIV Sensor)	TABLE 2
3BH	Note request error	TABLE 11
3CH	Counting Error(between DIV Sensor and EJT Sensor)	TABLE 3
3DH	Counting Error(between EJT Sensor and EXIT Sensor)	TABLE 3
3FH	Reject Tray is not recognized	TABLE 5
40H	Lower Bill-End	TABLE 10
41H	Motor stop	TABLE 6
42H	JAM at DIV Sensor	TABLE 4
43H	Timeout(From DIV Sensor to EJT Sensor)	TABLE 3
44H	Over Reject	TABLE 7
45H	Upper Cassette is not recognized	TABLE 8
46H	Lower Cassette is not recognized	TABLE 8
47H	Dispensing timeout	TABLE 1
48H	JAM at EJT Sensor	TABLE 3
49H	Diverter solenoid or SOL Sensor error	TABLE 9
4AH	SOL Sensor	TABLE 9
4CH	JAM at CHK3,4 Sensor	TABLE 2
4EH	Purge error(JAM at DIV Sensor)	TABLE 4

3-2. Recommended Actions

TABLE 1

CODE	32H, 47H
Meaning	Pickup error
Check Point	- Is CASH CASSETTE located properly? - Is Bill inserted proper in the CASH CASSETTE ? - Is Push plate work smoothly in CASH CASSETTE? - Is any bill out from CASH CASSETTE?
Action	- Re install CASH CASSETTE after checking above

< Normal loading >



< Abnormal loading >

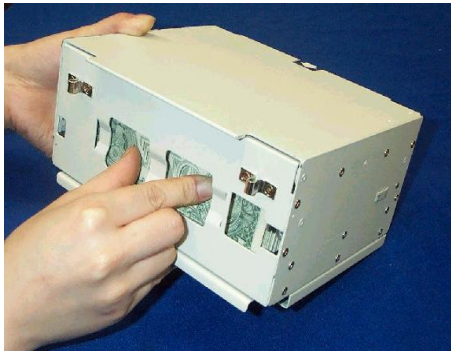


TABLE 2

CODE	33H, 4CH, 3AH
Meaning	- JAM at CHK1/2 Sensor - JAM at CHK3/4 Sensor - Counting Error(between CHK3,4 Sensor and Div Sensor)
Check Point	- Is CHK SENSOR 1& 2 normal? - Is CHK SENSOR 3& 4 normal? - Is the assembling condition of GUIDE CASH FEED 1& GUIDE CASH FEED 3 ASS'Y normal ? - Is idle roller rotation in the GUIDE CASH FEED 2 ASS'Y normal? - Is fixing screw in GUIDE CASH FEED 1 / 2 / 3 ASS'Y normal?
Action	- Try again after checking above situation. - In case of Jam, Turn a knob shown below

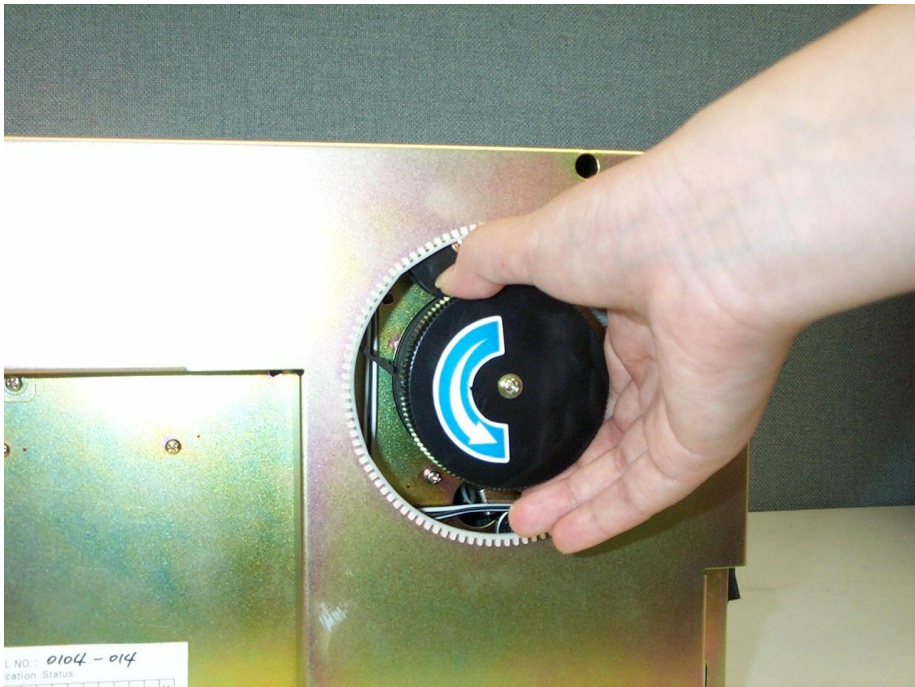


TABLE 3

CODE	34H, 35H, 3CH, 3DH, 43H, 48H
Meaning	- Overflow bill - JAM at EXIT Sensor or EJT Sensor - Counting Error(between DIV Sensor and EJT Sensor) - Counting Error(between EJT Sensor and EXIT Sensor) -Timeout(From DIV Sensor to EJT Sensor) - JAM at EJT
Check Point	- Are EXIT SENSOR & EJT SENSOR normal? - Is LOCKING device in GUIDE CASH FEED 7 ASS'Y locked normally? - Is idle roller rotation status in GUIDE CASH FEED 7 ASS'Y normal?
Action	- Try again after checking above situation. - Replace ASS'Y in case of roller rotation problem in GUIDE CASH FEED 7 ASS'Y.

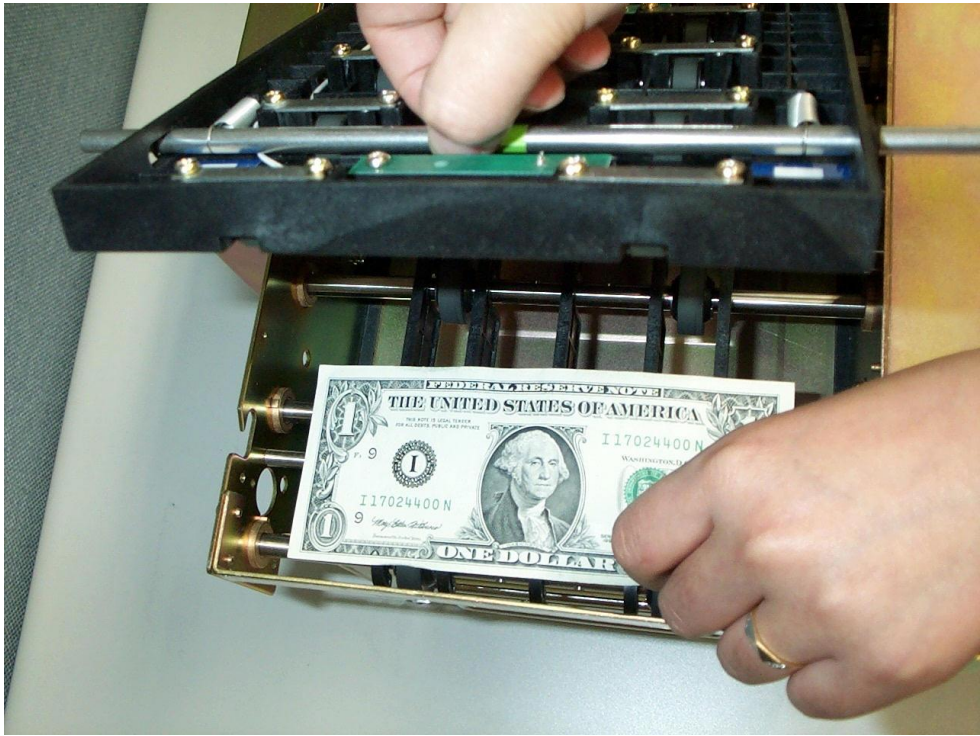
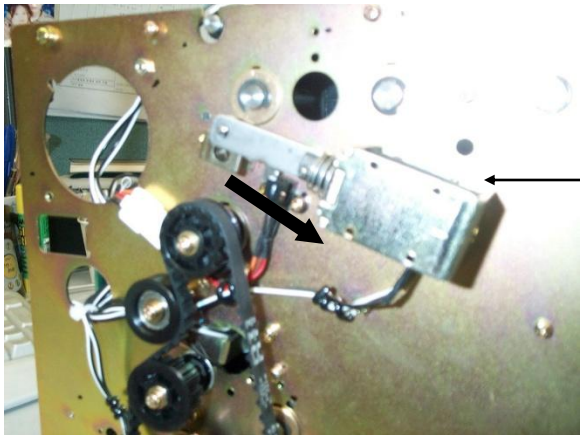


TABLE 4

CODE	36H, 42H, 4EH
Meaning	- JAM at DIV Sensor - Purge error(JAM at DIV Sensor)
Check Point	- Is DIV SENSOR 1 / 2 normal? - Is GAP between SHAFT DIVERter ASS'Y and SHAFT ASS'Y CASH FEED proper? - Is idle roller rotation in GUIDE CASH FEED 5 ASS'Y normal?
Action	- Try again after checking above situation. - In case of interference between SHAFT DIVERter ASS'Y & SHAFT ASS'Y CASH FEED 3, Adjust location of SOLENOID PIN(Please refer to below picture) - Replace ASS'Y in case of idle roller rotation problem in GUIDE CASH FEED 7 ASS'Y.



Solenoid and Solenoid pin should be adjusted in arrow direction

TABLE 5

CODE	3FH
Meaning	REJECT TRAY is not recognized
Check Point	-Is the location of REJECT TRAY normal? -Is the location of J20 CONNECTOR normal?
Action	- Insert REJECT TRAY to main body. - Connect J20 CONNECTOR in the MAIN PCB.

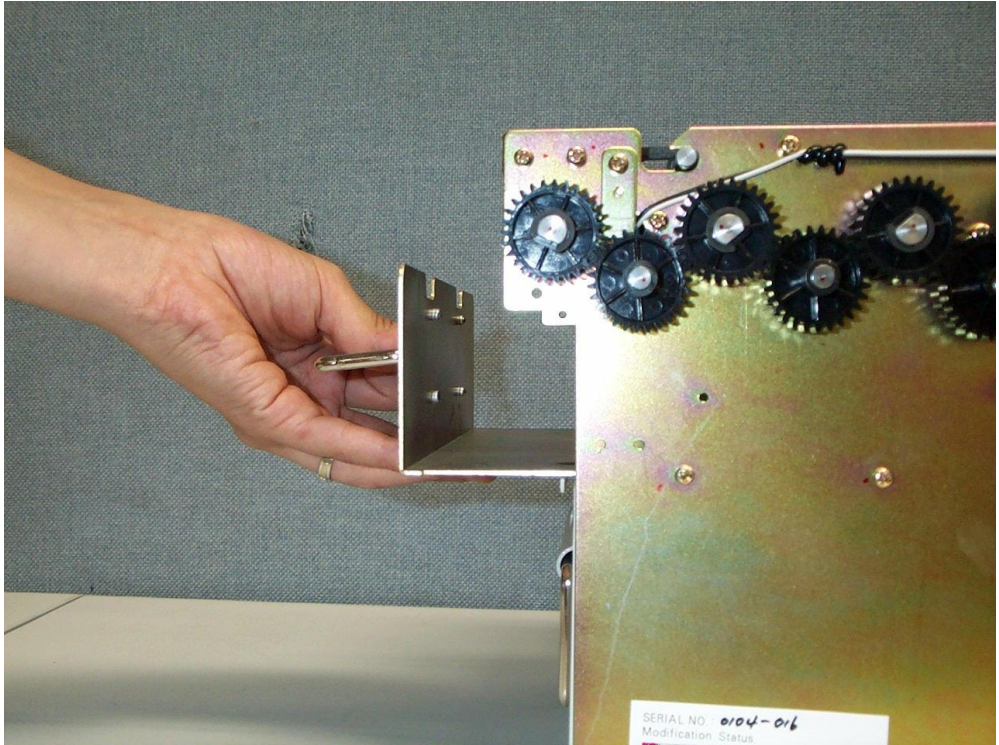


TABLE 6

CODE	41H
Meaning	Motor stop
Check Point	- Is any obstacle in Power Transportation part? - Is the location of J15 CONNECTOR correct? - Is the location of J14 CONNECTOR correct? - Is the wheel sensor normal or not? - Is the wheel assembled on its center point properly? (Is the wheel assembled with biased position?)
Action	-Try again after checking above situation. - Check J14 CONNECTOR. - Check J15 CONNECTOR - Replace with new wheel sensor (Interrupt sensor) - Assemble the wheel on the center position.

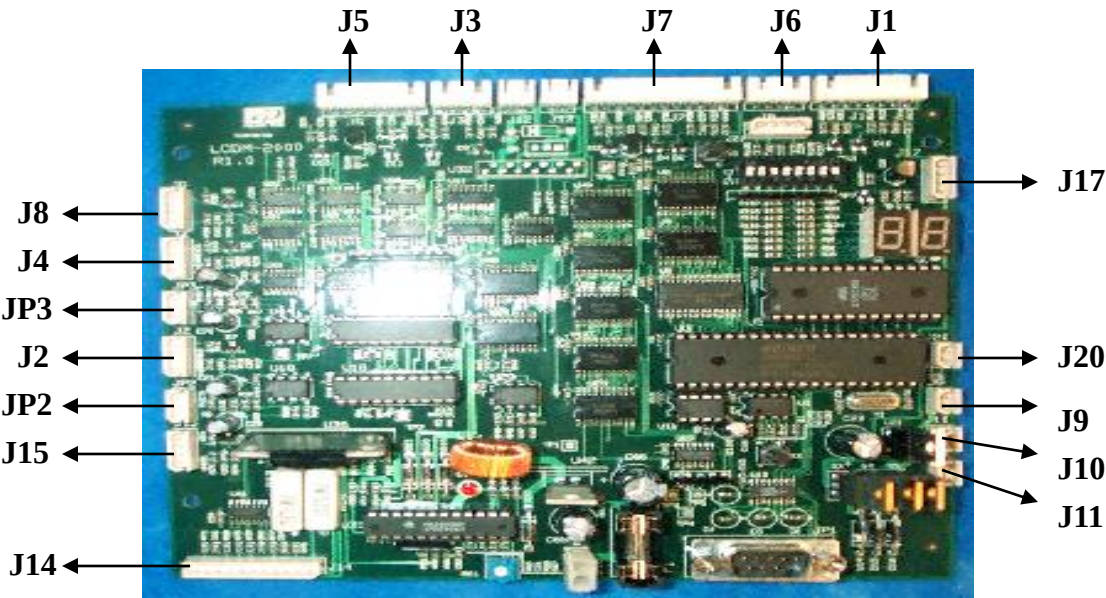


TABLE 7

CODE	44H
Meaning	Over Reject
Check Point	- Are the banknotes normally loaded in the CASH CASSETTE ? - Are the DIP SWITCHES properly set to your banknotes? - Check the reject code referred to the below Table 7-1. (To catch the reject code on TEST PROGRAM, you should set the dip switch #3 to OFF like the Table 7-2.)
Action	- Please do the proper service action for each case referred to the Table 7.

< Table 7-1 : Reject Code >

Reject Code	Suspected Cause
33	The distance between banknotes is too close.
3F	One more banknote is picked and followed in the final pickup trial.
36	One more banknote is picked up during the processing the dispense command.
38	The banknote is skewed too much on the diverter sensor.
3C	The banknotes suspected as double are detected.
3D	The thickness of banknote is abnormally thin.
35	The banknote length is so long that it may be the overlapped banknotes.
3E	The banknote length is so short that it may be the damaged or folded banknote.
9C 80	Either check sensor could not detect the banknote.
9C 9E 9C 9F	The length measured on check sensors is not out of limit.
9C 9D	The banknote passed on check sensors is considered as too much skewed.
9C 03 9C 00	The banknote are not normally passing on the check sensor because of fast consequential pickup.

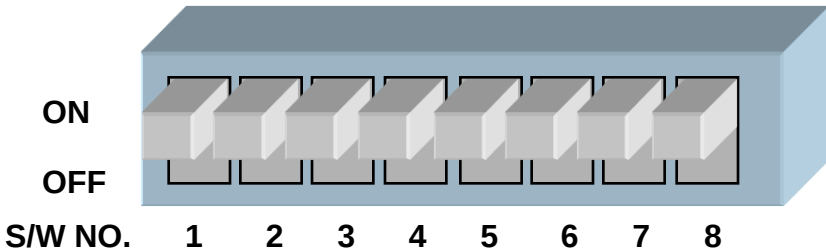
TABLE 7

CODE	44H
Meaning	Over Reject

< Table 7-2 Dip Switch Setting for Display of Reject Code >

ON

OFF



S/W NO. 1 2 3 4 5 6 7 8

No.	FUNCTION	S/W ON	S/W OFF
1	ACTIVATION OF NEAREND/BILL END (NEAREND : 10~30 NOTES REMAINS.)	NEAREND	BILL END
2	OPERATION ON OVER-REJECT (OVER REJECT: 6 REJECTS IN SERIES)	CONTINUE NEXT TRA.	STOP UNTIL M/A
3	THICKNESS OF BANKNOTE IN LOWER CASSETTE	0.10~0.12 mm	0.13~0.15 mm
4	THICKNESS OF BANKNOTE IN UPPER CASSETTE	0.10~0.12 mm	0.13~0.15 mm
5	BAUD RATE	9600	19200
6	DISPLAY OF REJECT CODE ON TEST PROGRAM	NOT DISPLAYED	DISPLAY
7	CHOICE OF BANKNOTE HEIGHT IN LOWER CASSETTE	73~78 mm	62~72 mm
8	CHOICE OF BANKNOTE HEIGHT IN UPPER CASSETTE	73~78 mm	62~72 mm

TABLE 7

CODE	44H
Meaning	Over Reject
< Table 7-3 Over Reject by Double Detect Problem (Code: 3C) > Case 1. PLATE D/D SENSOR deflected by external force. : It should be positioned like the picture and attached to RVDT SENSOR BLOCK and PIN properly. : If the deflection is too serious, you should replace with new ones.	
Case 2. Abnormal RVDT Sensor, Shaft Error in Production : It is rare case but sometimes the sensor or shaft error in production causes such a over-reject. It should be very serious and difficult to fix that in customer's house. It is recommended the RVDT should be replaced with new one.	

TABLE 7

CODE	44H
Meaning	Over Reject
< Table 7-4 Abnormal Clutch or Pick-up Roller (Code: 9C 03, 9C 00) > It may be caused by the out-of-quality clutch, which is sticking to the power transmission all the time. So the clutch should be replaced with new one. Otherwise, the abnormal pick-up roller may cause the over-reject. It needs replacement with new one, in order to fix the problem. < Table 7-5 Skew, Obstacle on Path (Code: 9C 80, 9C 9D, 9C 9E, 9F) > In case of piece cut from the bad banknote or improper material on the path, it enables to cause the skew amplification, which can occur over-reject. The note be changed with new one or the path should be cleared by dispensing the thick note size paper.	

TABLE 8

CODE	45H,46H
Meaning	- Upper Cassette is not recognized - Lower Cassette is not recognized
Check Point	- Is Cassette fully inserted to main body? - Is the location of J7 CONNECTOR correct?
Action	-Try again after checking above situation. - Check J7 CONNECTOR

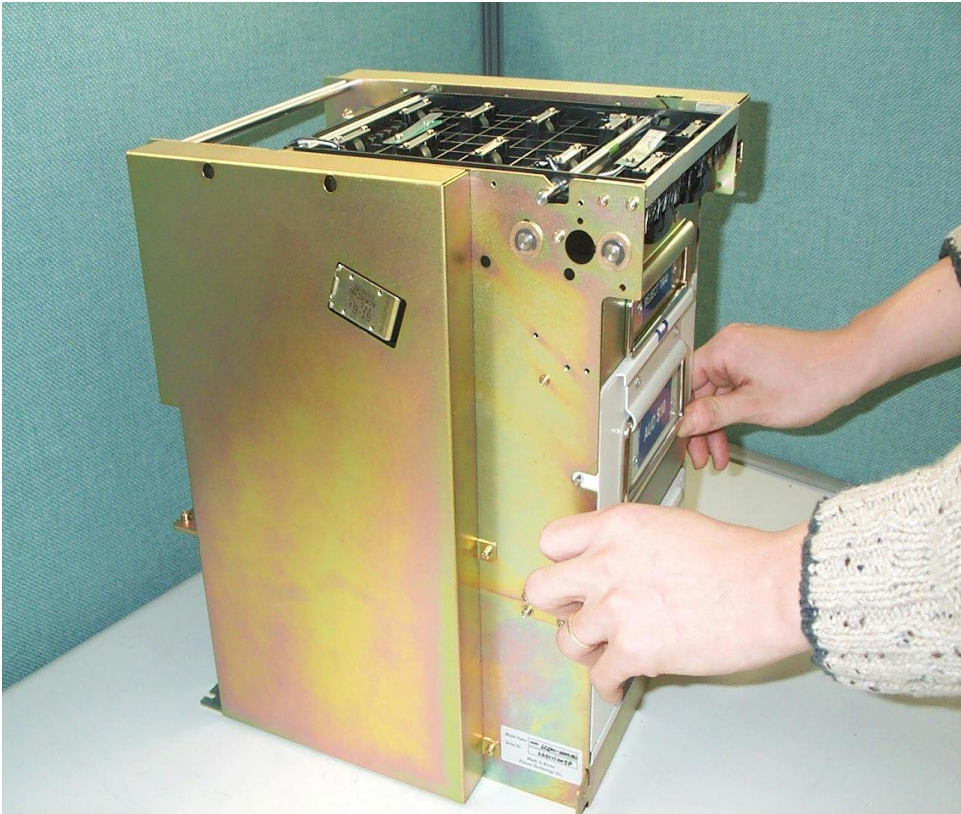


TABLE 9

CODE	49H, 4AH
Meaning	- Diverter solenoid or SOL Sensor error - SOL Sensor error
Check Point	- Is the location of J7 CONNECTOR correct? - Is the location of J10 CONNECTOR correct?
Action	-Try again after checking above situation. - Check J7 CONNECTOR. - Check J10 CONNECTOR

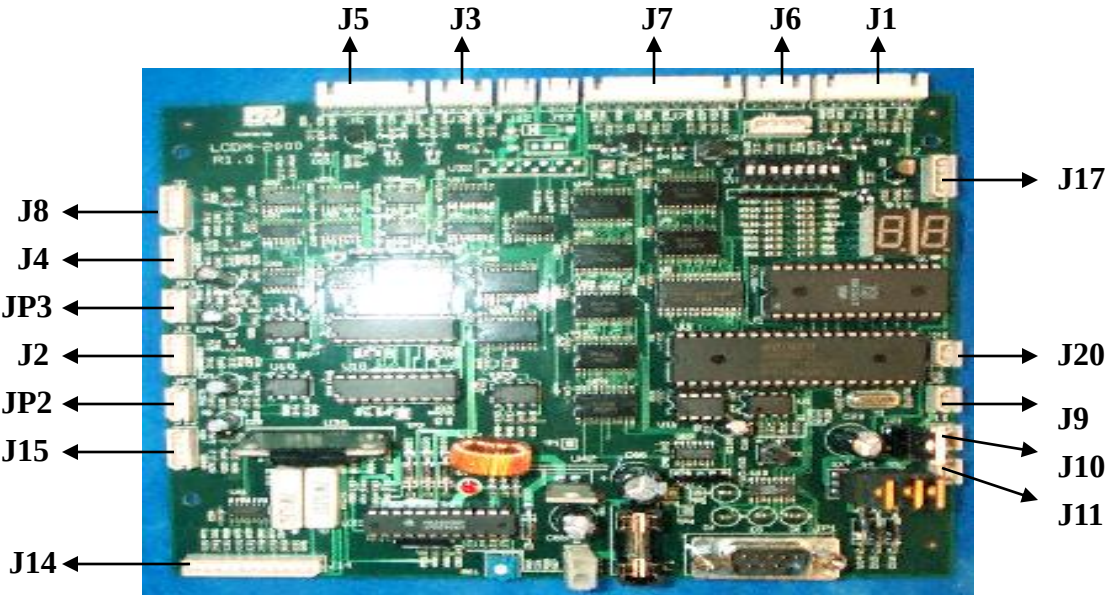


TABLE 10

CODE	38H,40H
Meaning	- Upper Bill-End - Lower Bill-End
Check Point	- Are enough notes in the Upper CASH CASSETTE? - Are enough notes in the Lower CASH CASSETTE?
Action	- Loading notes in the Upper or Lower CASH CASSETTE

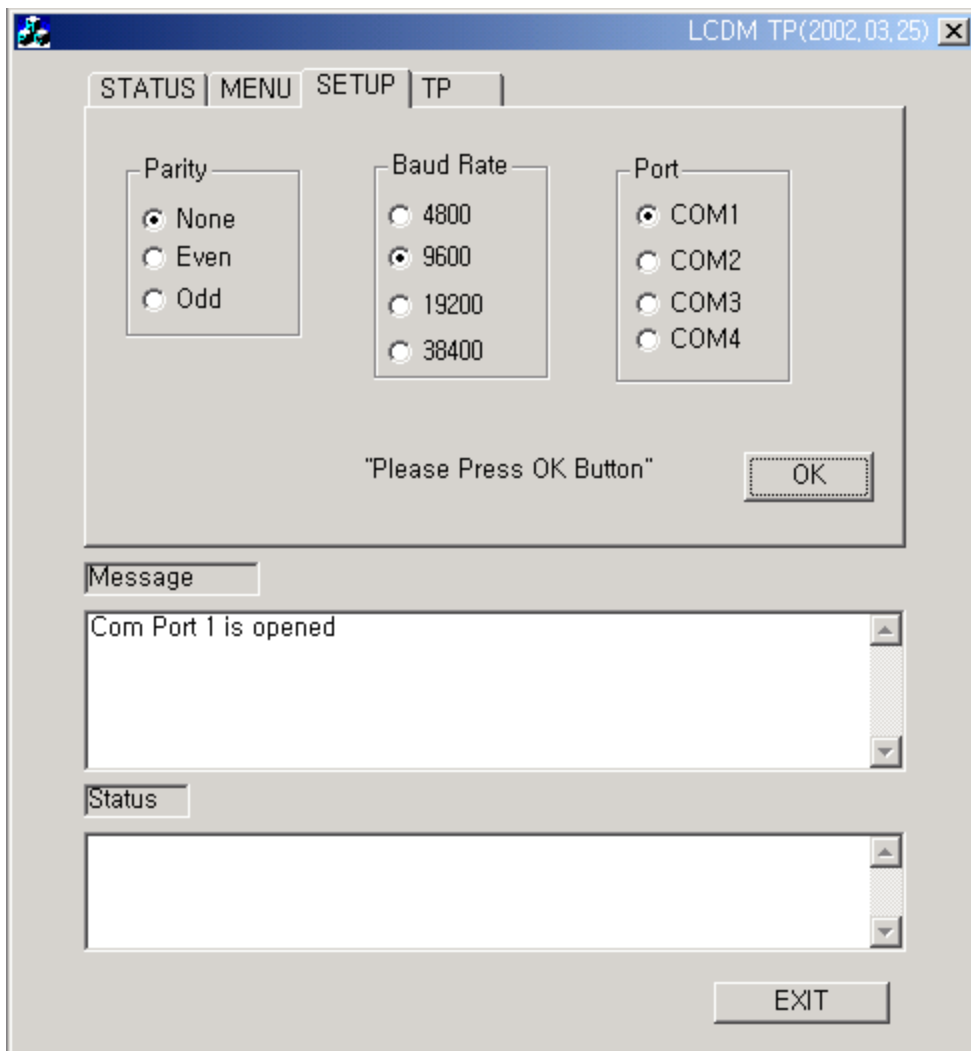
TABLE 11

CODE	3BH
Meaning	-Note request error
Check Point	- Are requested notes of one transaction correct?
Action	- Dispensing notes of one transaction is from 1 note to 20 notes

4. Operating the LCDM-2000

I. SETUP

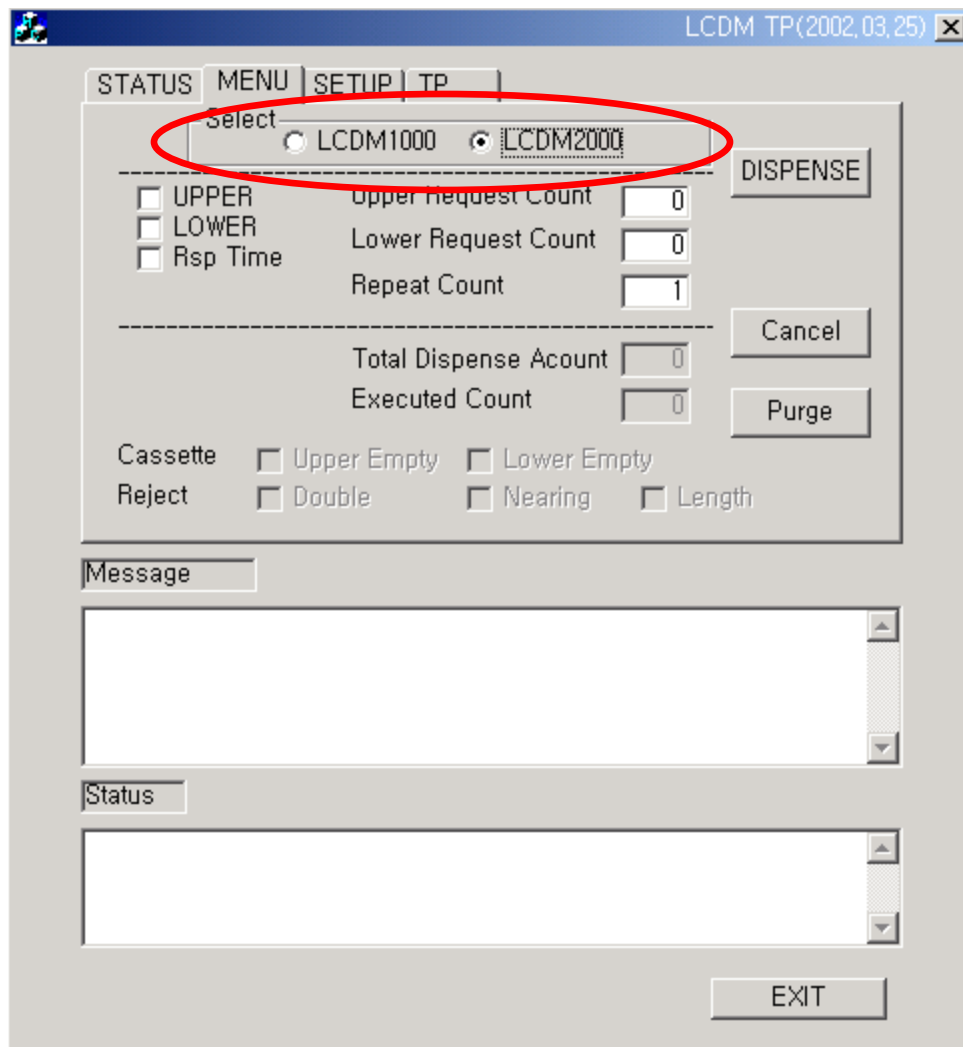
- 1) Start the test program "LCDMTP"
- 2) Maintain default value like below.
(If you need to choose another port, check the other port number)
- 3) Press "OK" button



< Fig 1 : SETUP PAGE >

II. MENU

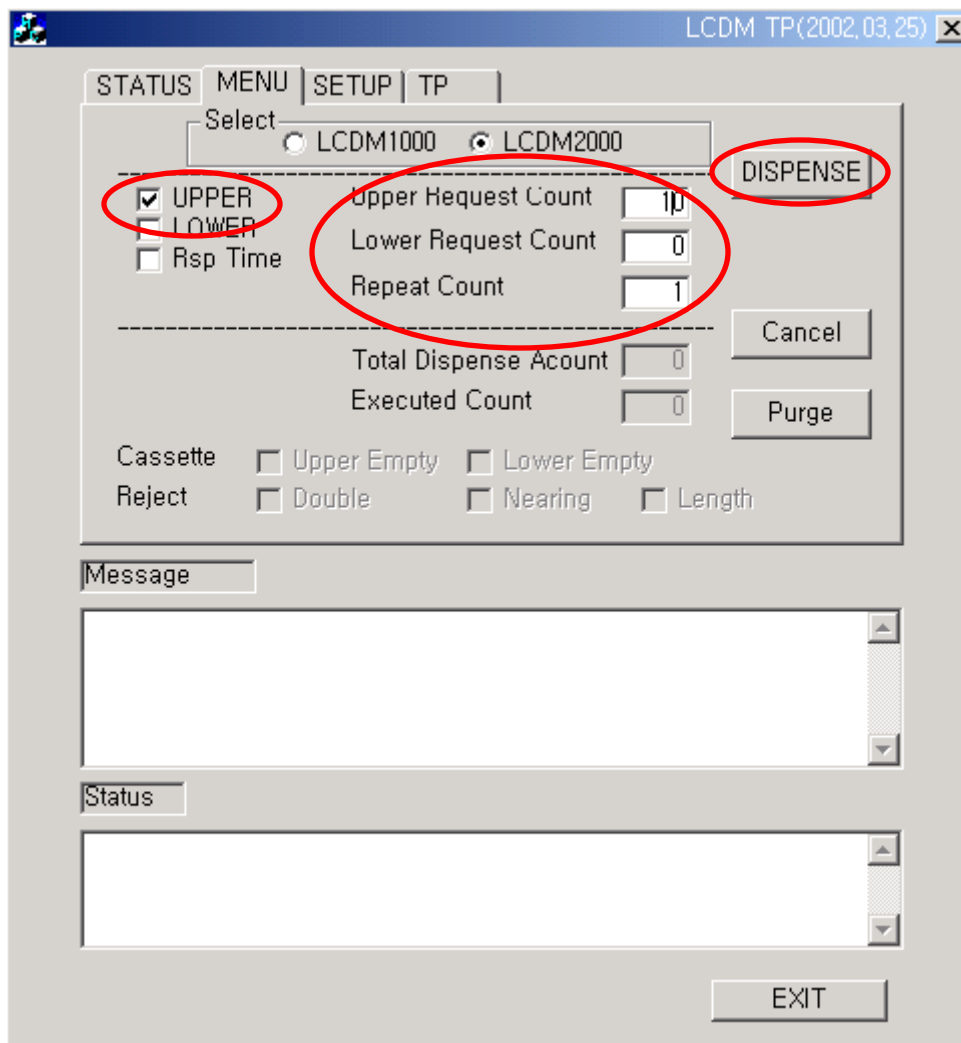
- 1) Choose LCDM-1000 or LCDM-2000



< Fig 2 : MENU PAGE >

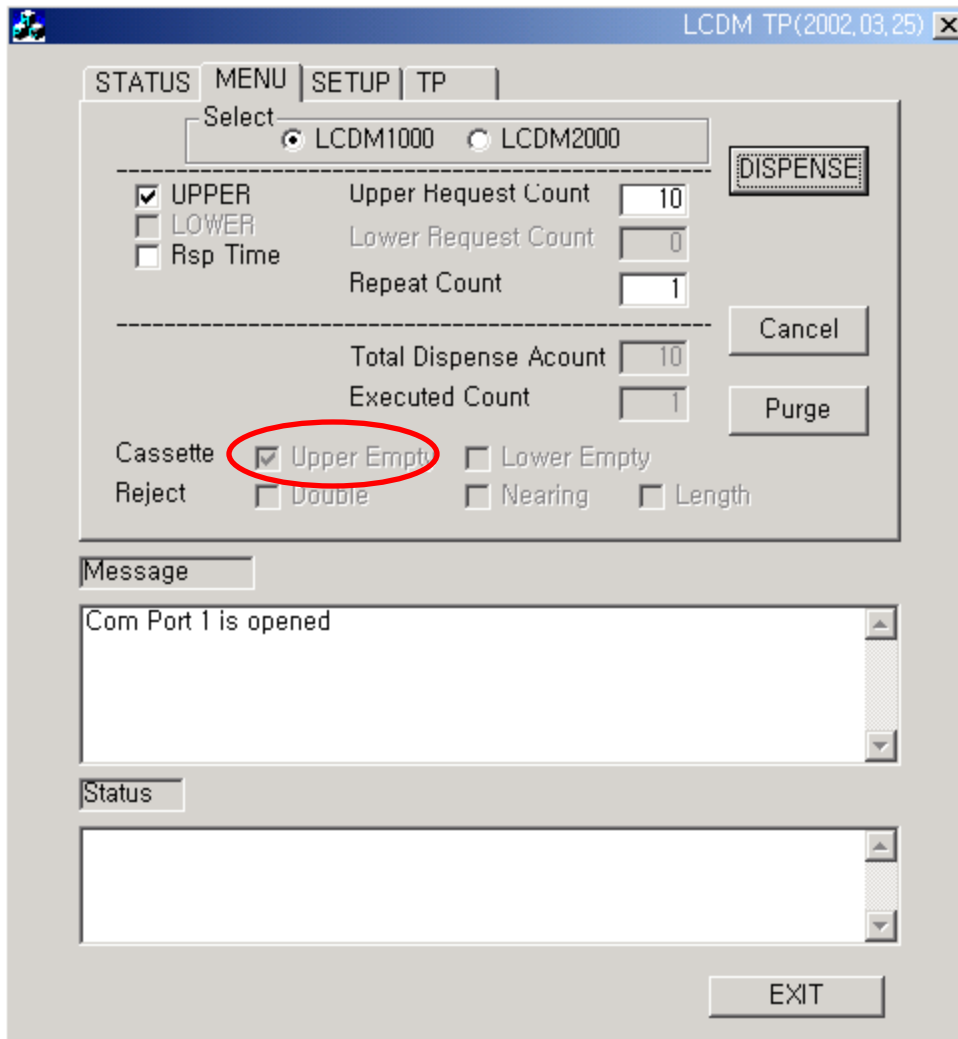
2) DISPENSE

- (1) Check UPPER or LOWER
- (2) Fill in the blank of "Upper Request Count" or "Lower Request Count"
(Recommended Value are from 1 ~ 20)
- (3) Fill in the blank of "Repeat Count"
(Recommended Value are from 1 ~ 999)
- (3) Press the button of "DISPENSE"



<Fig 3 : Ten bills are dispensed 1time from cassette>

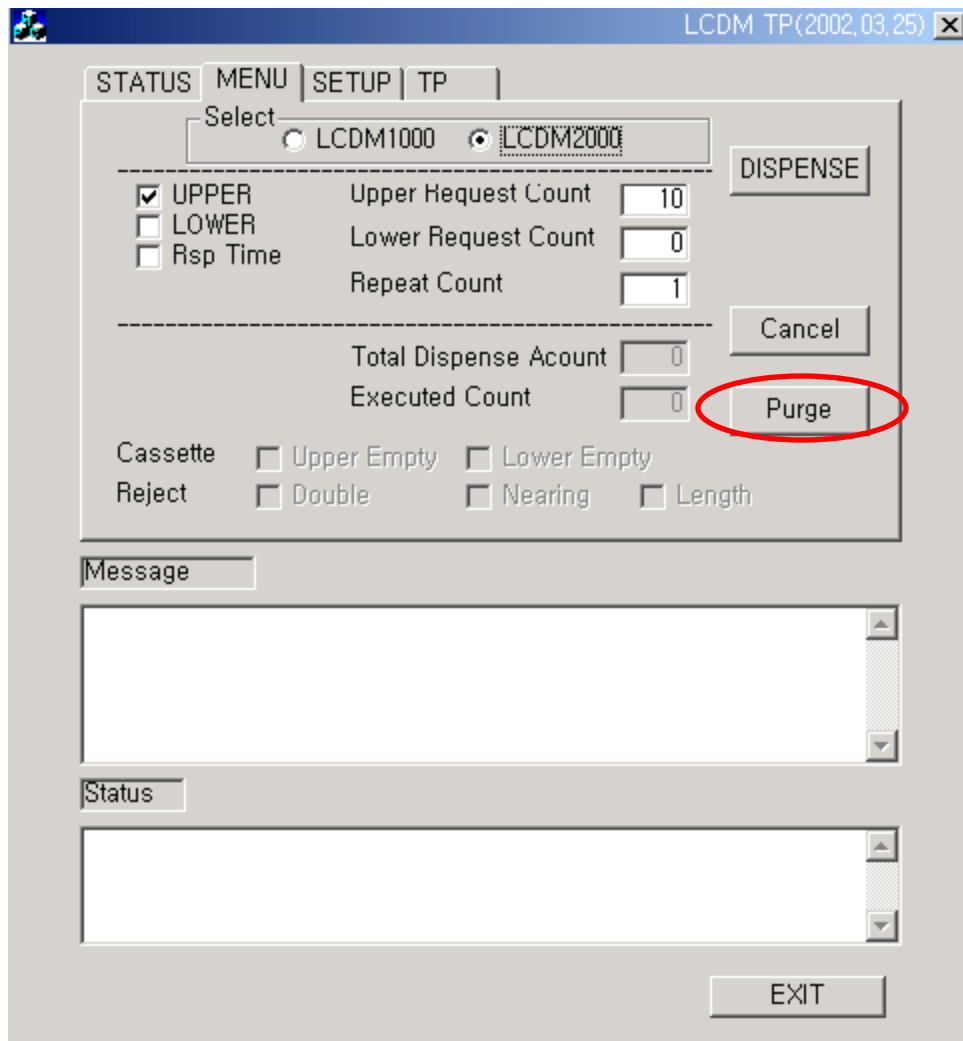
- (4) If Near-End occurs, V mark is checked at “Upper Empty”



<Fig 4 : Near-End occurs>

3) PURGE

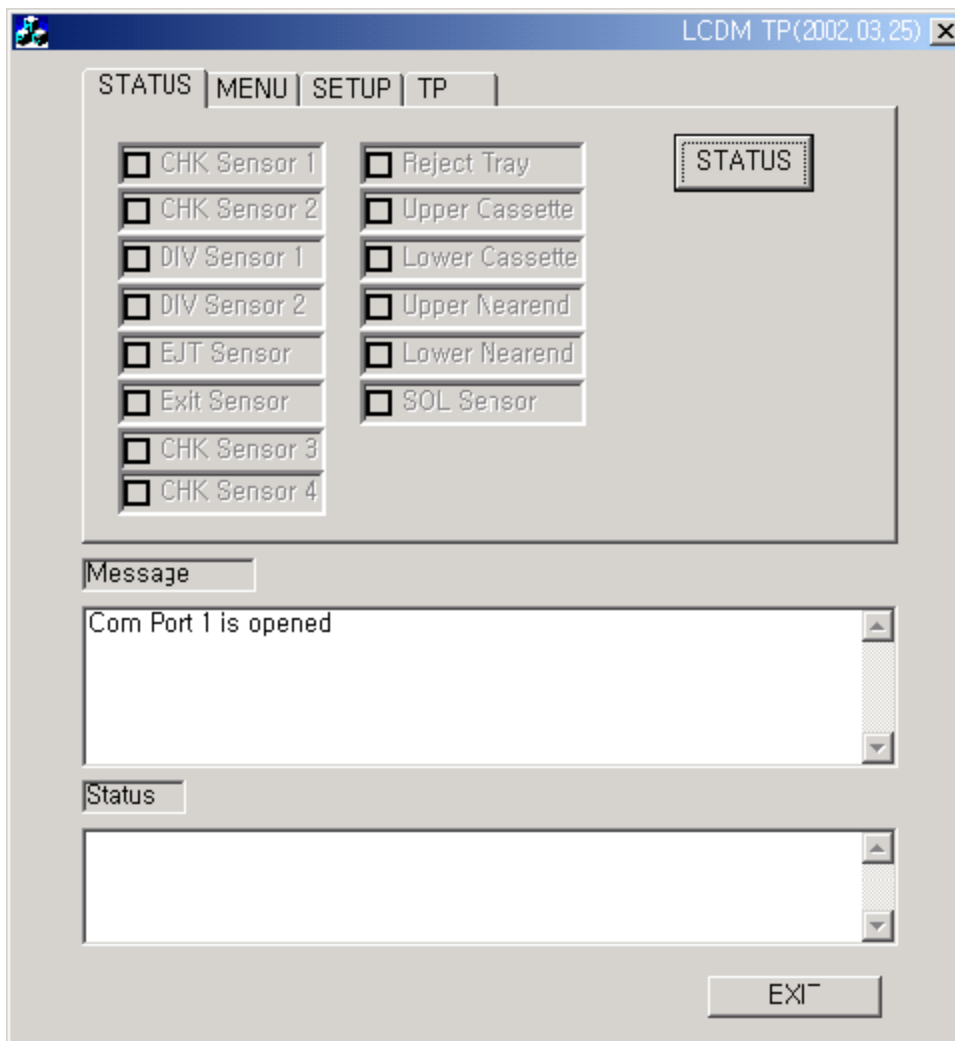
If you want to clear the note in the path, press the button of “Purge”



<Fig 4 : Purge>

III. STATUS

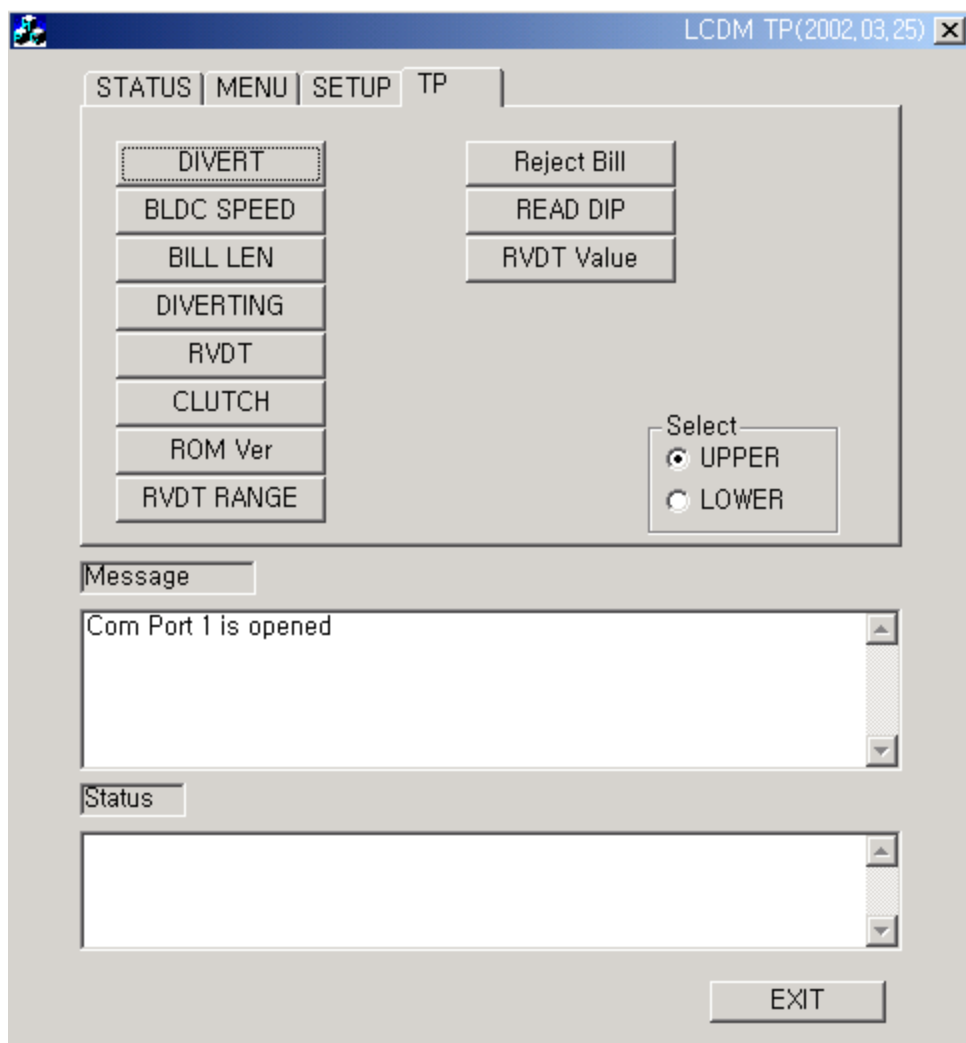
- 1) Press "STATUS" button and all sensors are rechecked.
This shows system status for you.
- 2) If sensor error occurs, V mark is checked at each column accordingly.



< Fig 5 : STATUS PAGE >

IV. TP

- 1) This page is about test program for checking each function and element of the unit.
- 2) Motor Speed, Bill Length, Test Dispense, Diverting, RVDT Value, ROM Version and Clutch Tests can be performed and examined.
- 3) The recommended values are shown in the Fig. 7 of next page.



< Fig 6 : TP PAGE >

No.	Command	Element	Check Points		Rec. Range (TP)
1	BLDC SPEED	Motor	Rotation Speed		6800 ~ 7800
2	RVDT		No Load (Allowance)		- 5 ~ + 5
3	BILL LEN	Optical Sensor (Length)	USD, CAD, etc (app. 63~70 mm)		29 ~ 3E
			KRW, JPY, etc (app. 73~80 mm)		2F ~ 47
		RVDT Sensor (Thickness)	USD	Normal	Higher than 0500
				Double	Lower than 0500
			CAD	Normal	Higher than 0430
				Double	Lower than 0430
			AUD NZD	Normal	Higher than 04C0
				Double	Lower than 04C0
4	CLUTCH	Clutch	Operation Test		On/Off
5	DIVERT	Solenoid	Operation Test		On/Off